FIG. 1

THREE-DIMENSIONAL LOCOS SHAPE

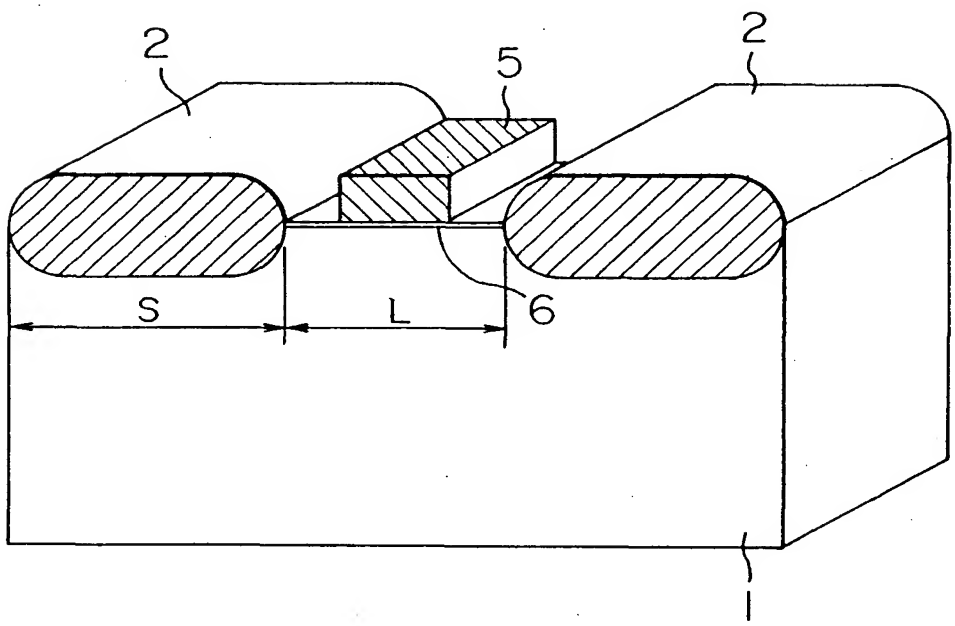


FIG. 2A

EXAMPLE OF ANALYSIS OF STRESS INCREASING CONDITION AT THE TIME OF FORMATION OF GROOVE

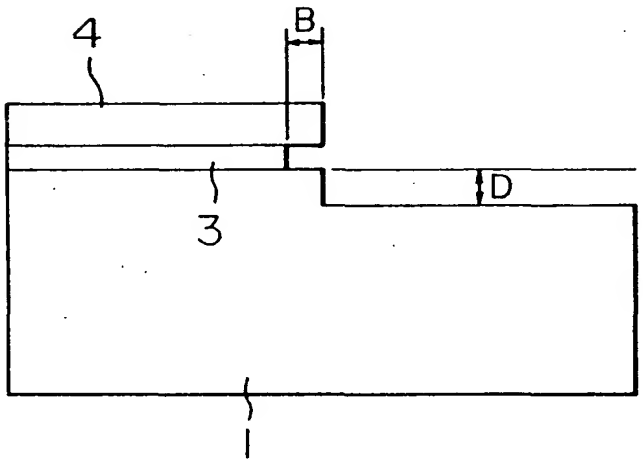


FIG. 2B

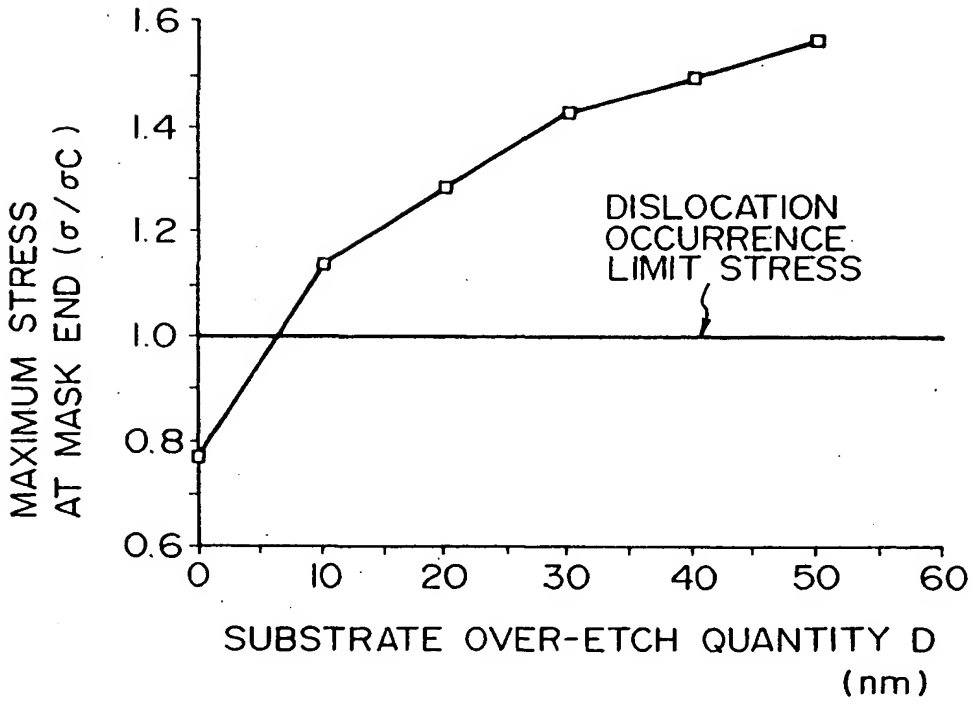


FIG. 3A

EXAMPLE OF ANALYSIS SHOWING DEPENDENCE OF RESULTING STRESS ON L/S DIMENSION

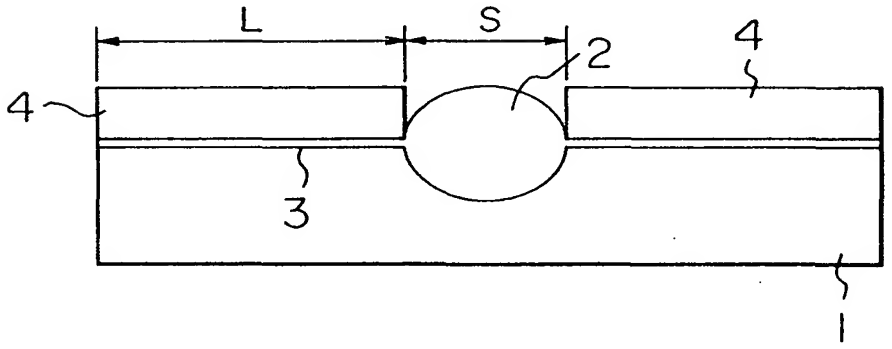


FIG. 3B

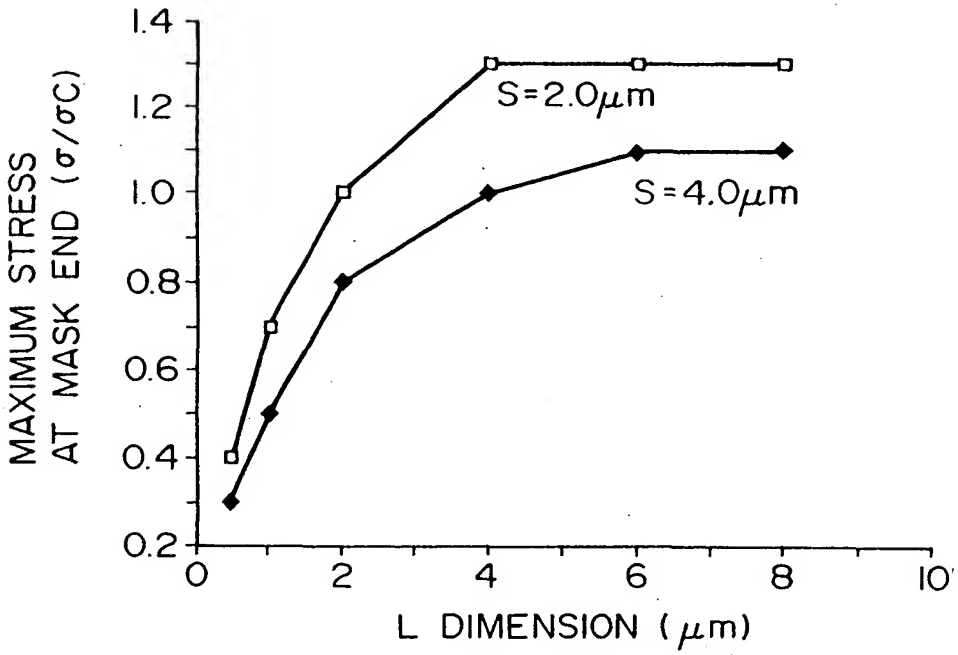


FIG. 4

EXAMPLE OF DESIGN CHART

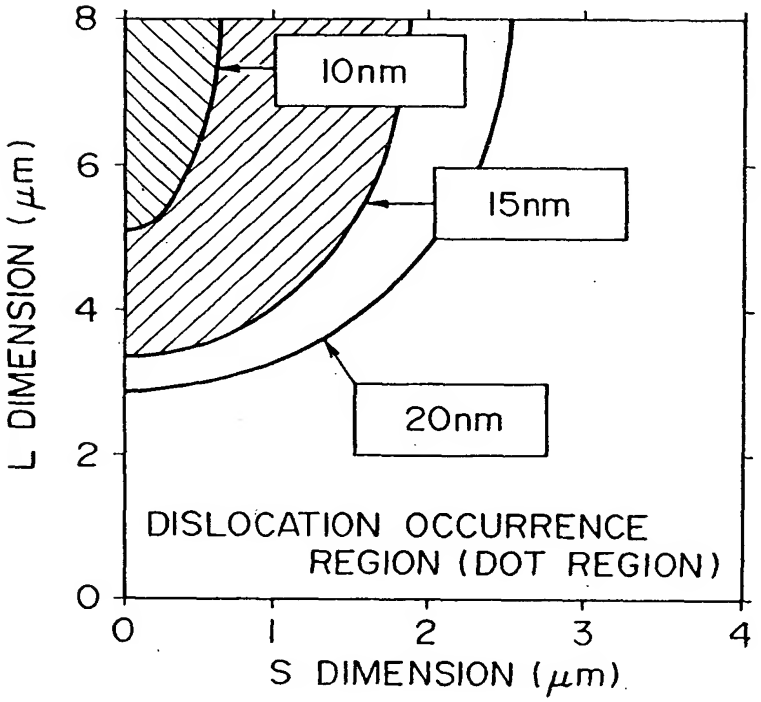


FIG. 5

SECTIONAL VIEW IN DEVICE ISOLATION STEP

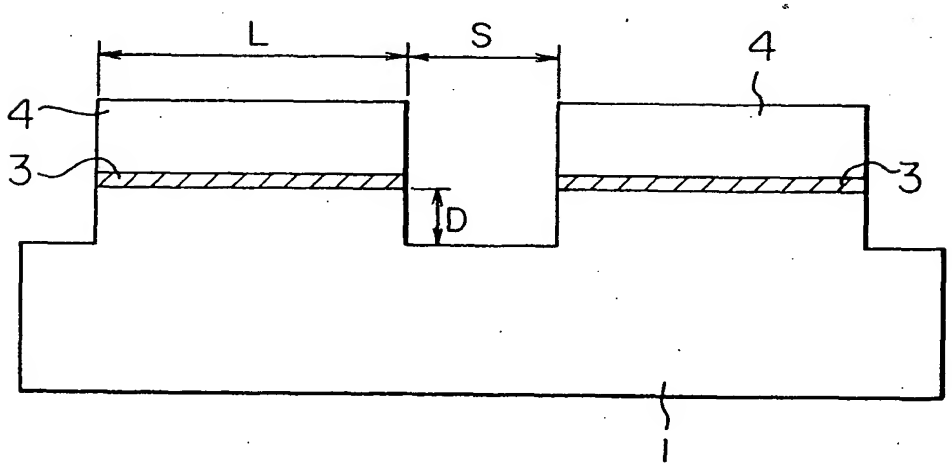


FIG. 6

PLAN VIEW WHEN FORMING DEVICE ISOLATION REGION

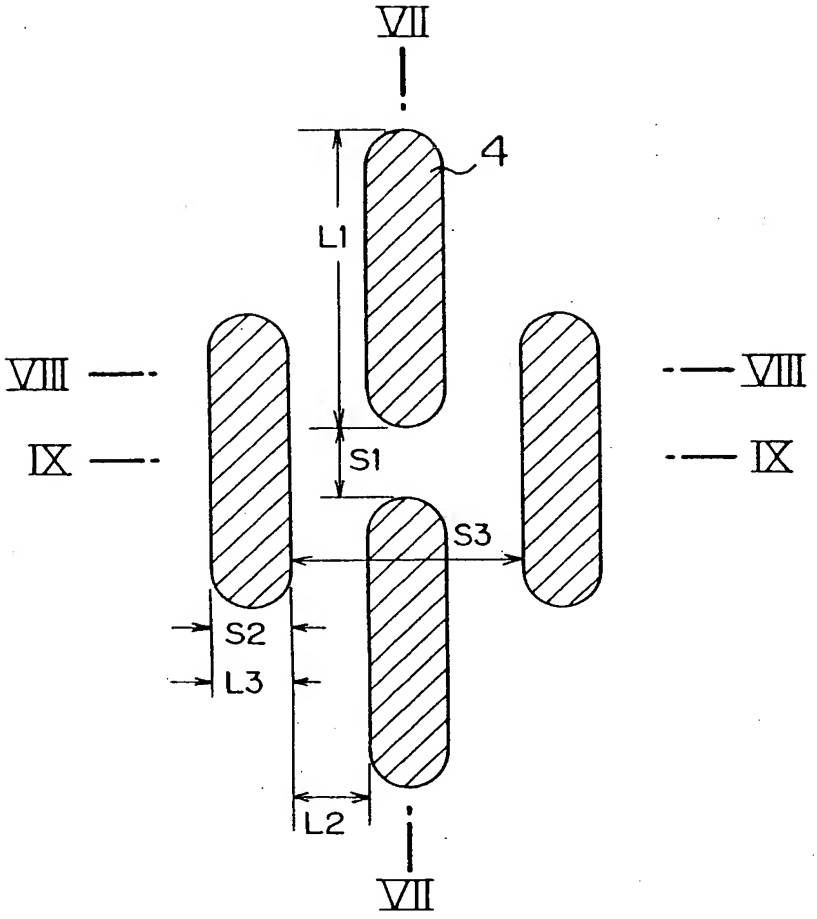


FIG. 7

SECTIONAL VIEW TAKEN ALONG LINE VII-VII OF FIG. 6

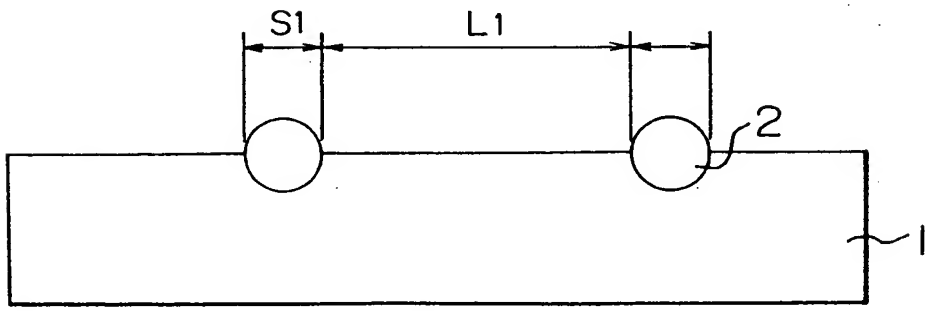


FIG. 8

SECTIONAL VIEW TAKEN ALONG LINE VIII-VIII OF FIG.6

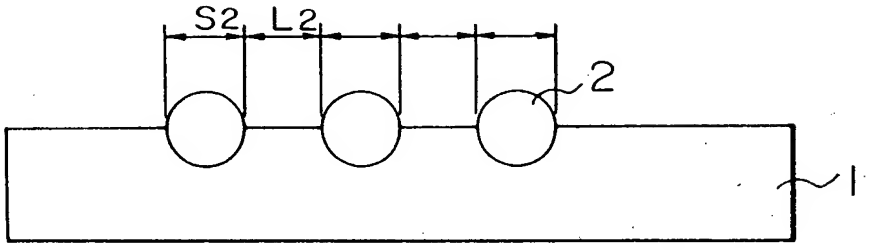


FIG. 9

SECTIONAL VIEW TAKEN ALONG LINE IX-IX OF FIG.6

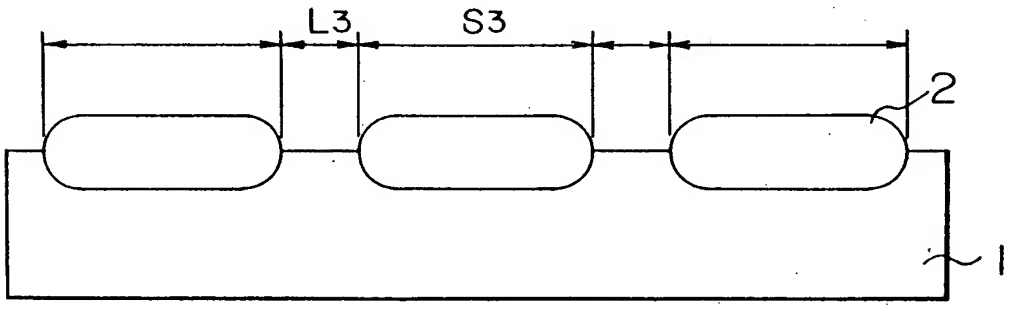


FIG. 10

FLOW FOR DETERMINING WIDTH DIMENSION OF DEVICE FORMATION REGION OR DEVICE ISOLATION REGION

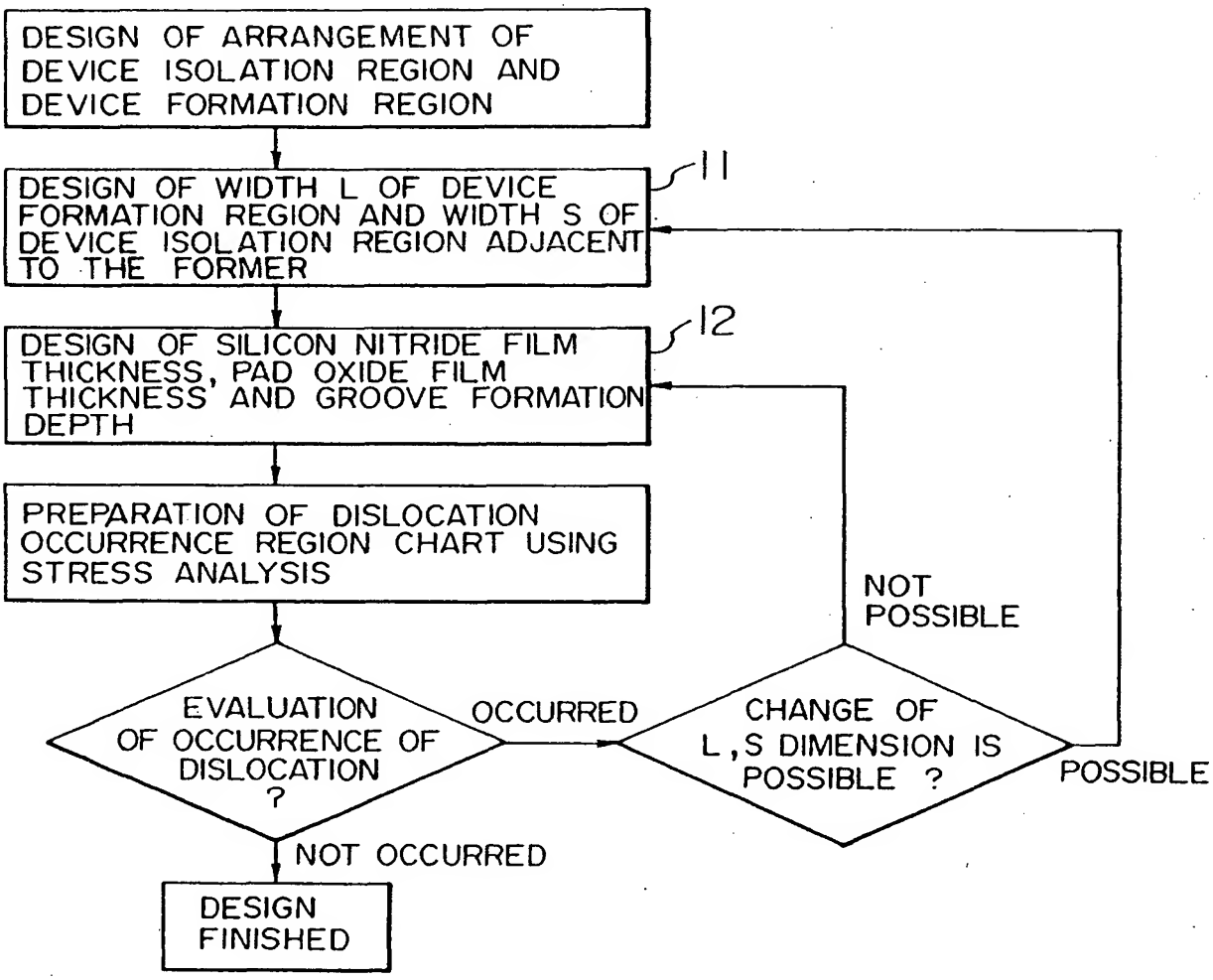


FIG. 11

SECTIONAL VIEW OF SEMICONDUCTOR DEVICE AFTER GROOVE FORMATION

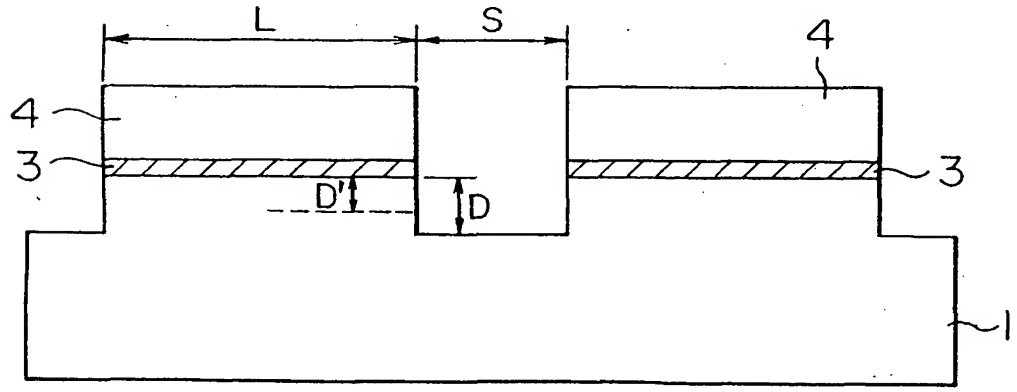


FIG. 12

RELATION BETWEEN ETCH-BACK DISTANCE OF PAD OXIDE FILM AND MAXIMUM STRESS NEAR GROOVE END

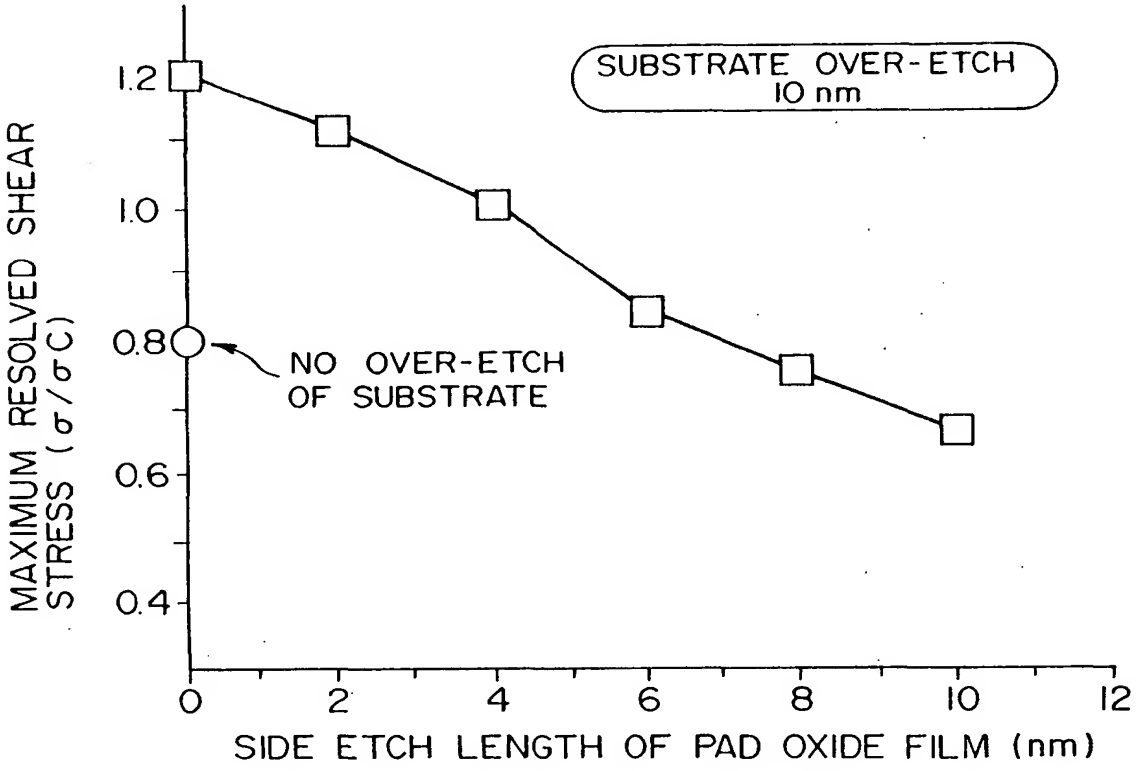


FIG. 13

SECTION OF DEVICE AFTER ETCH-BACK OF PAD OXIDE FILM

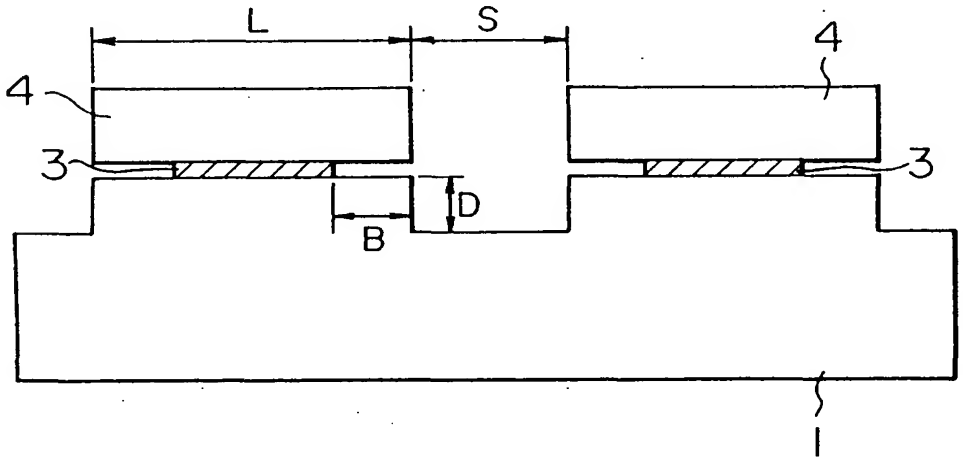


FIG. 14

FLOW FOR DETERMINING WIDTH OF DEVICE FORMATION REGION OR DEVICE ISOLATION REGION

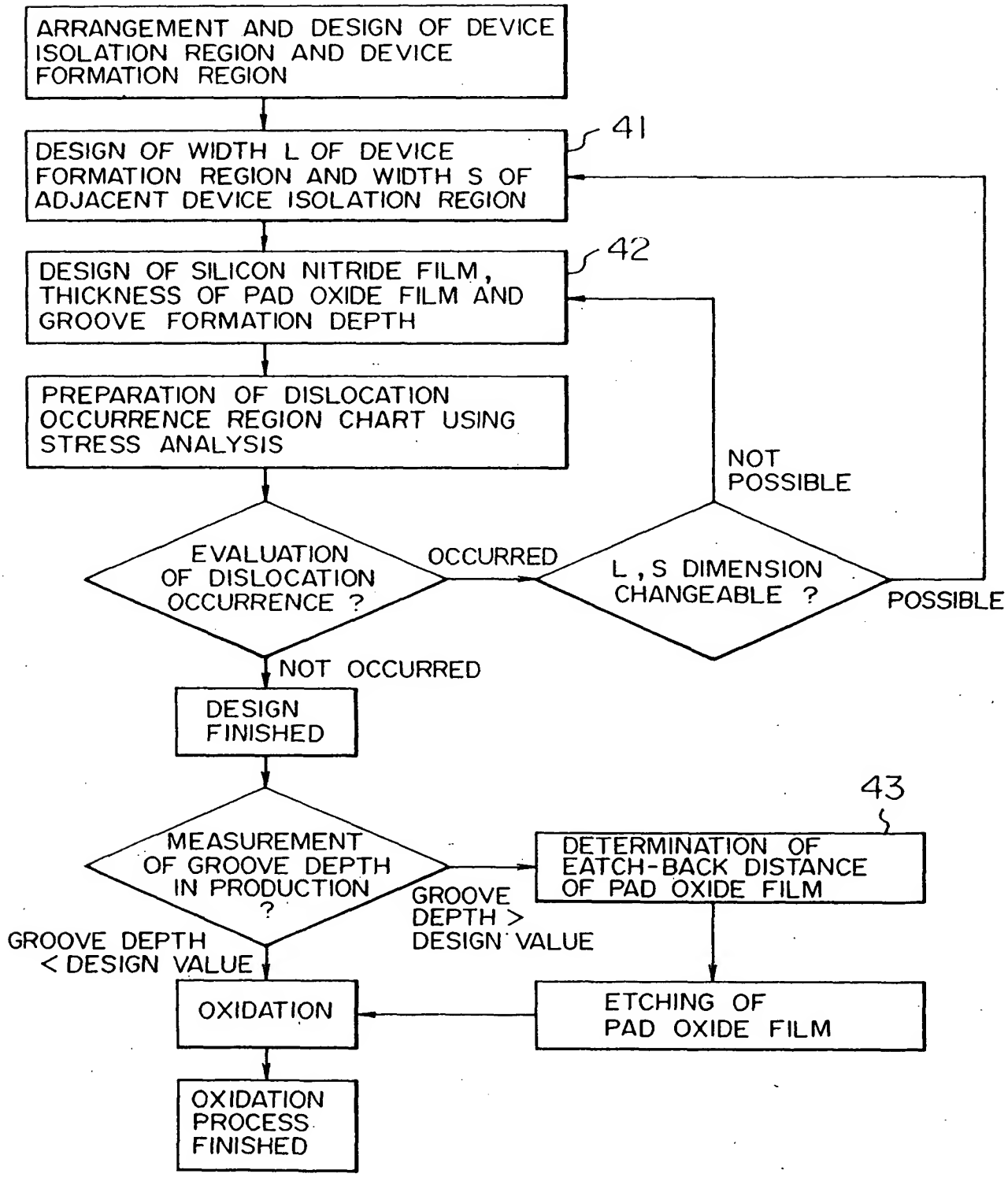


FIG. 15

MICROGRAPH OF SEMICONDUCTOR CRYSTAL STRUCTURE SHOWING FORMATION EXAMPLE OF DEVICE ISOLATION REGION

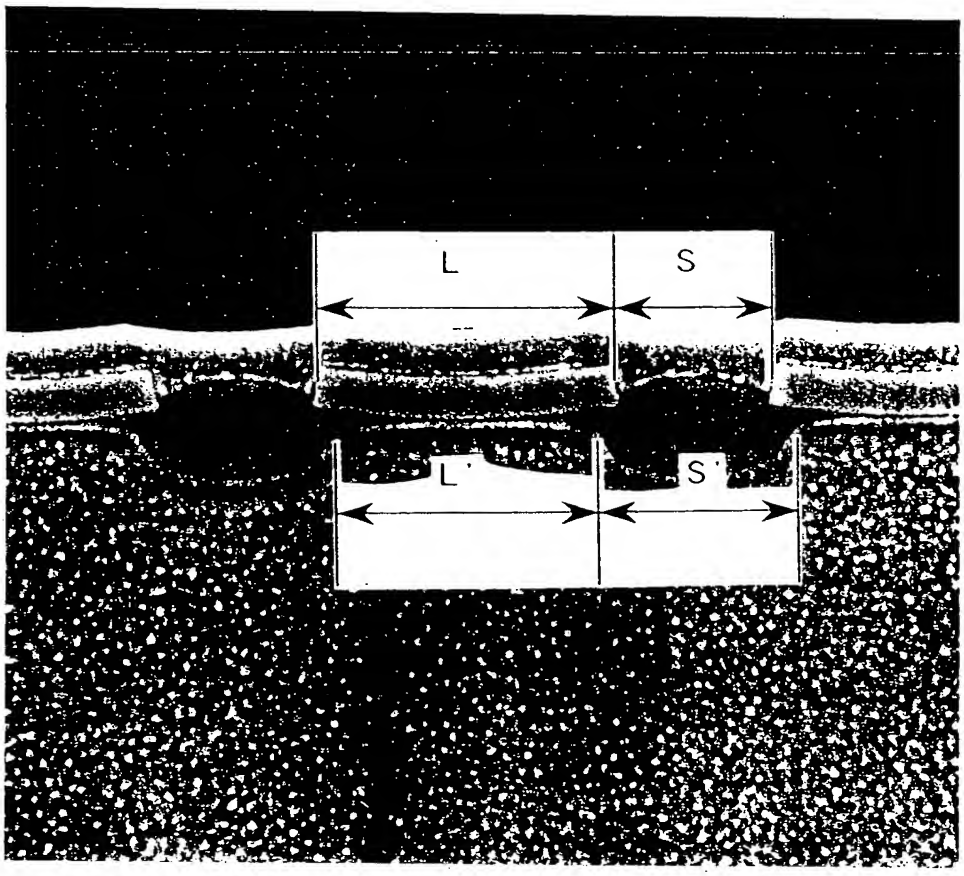


FIG. 16

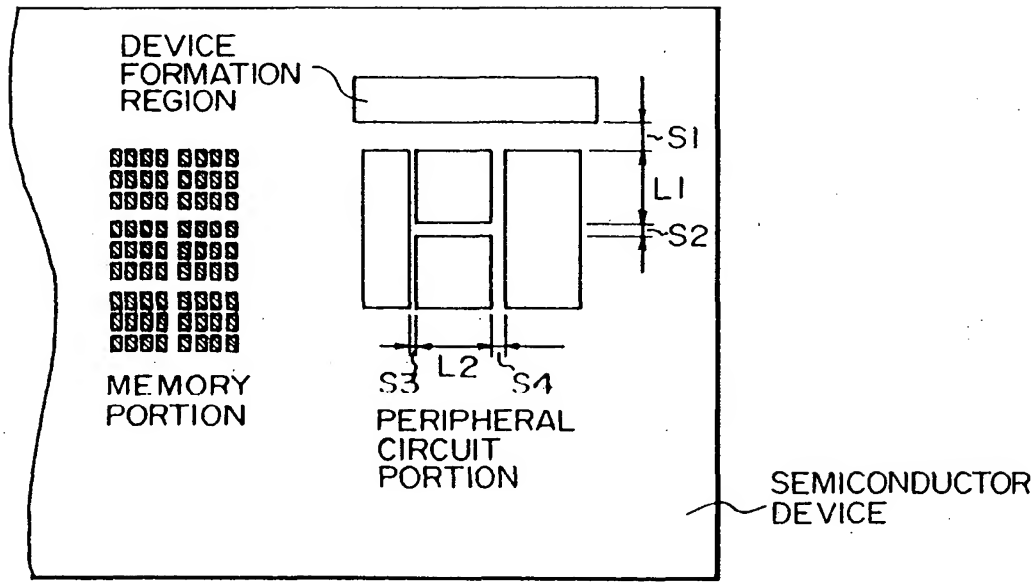


FIG. 17

STRESS ANALYSIS STEP

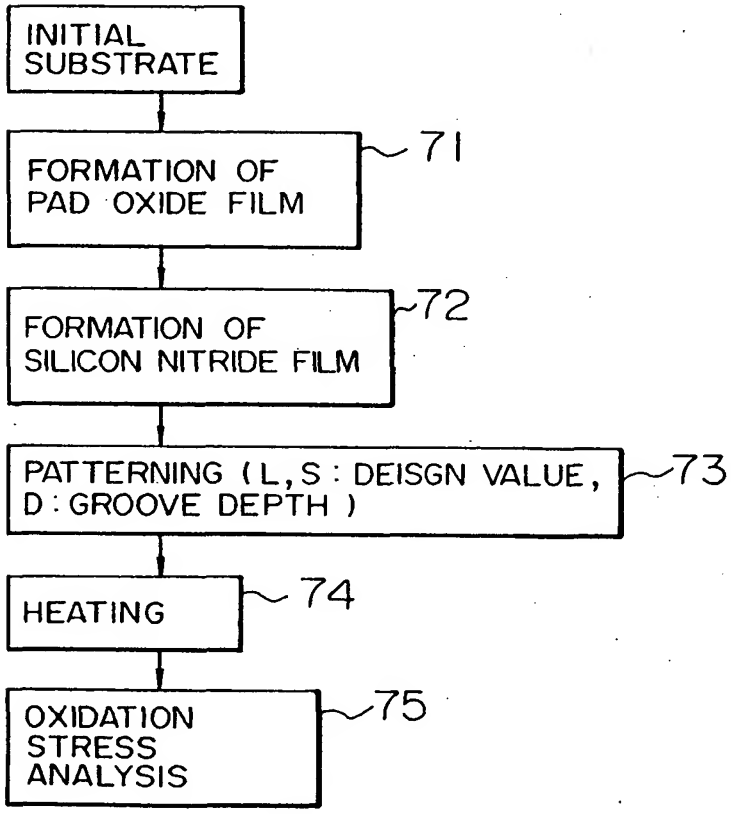
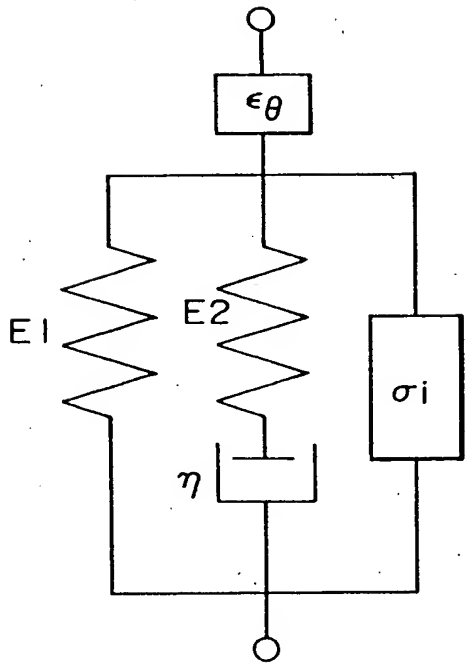


FIG. 18



VISCO-ELASTIC MODEL FOR STRESS ANALYSIS

STRESS DISTRIBUTION CHART OF EACH SPECIFICATION

FIG. 19A

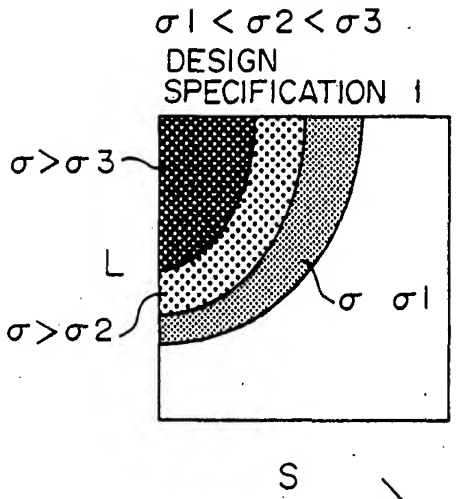


FIG. 19B

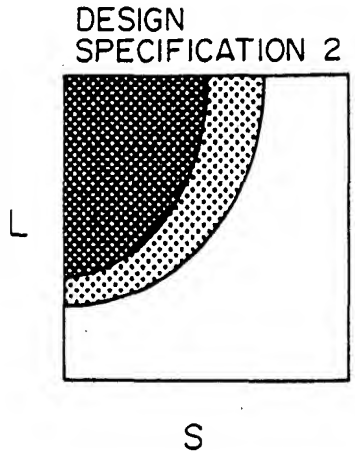


FIG. 19C

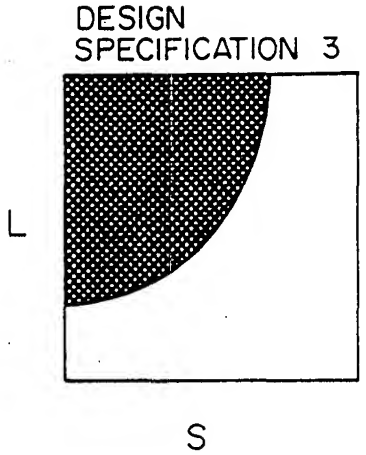
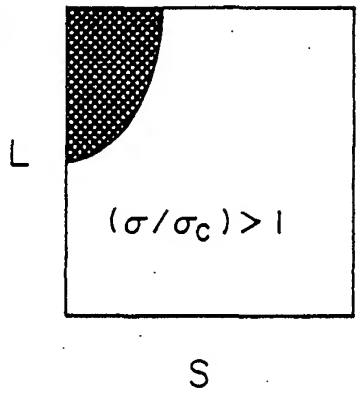
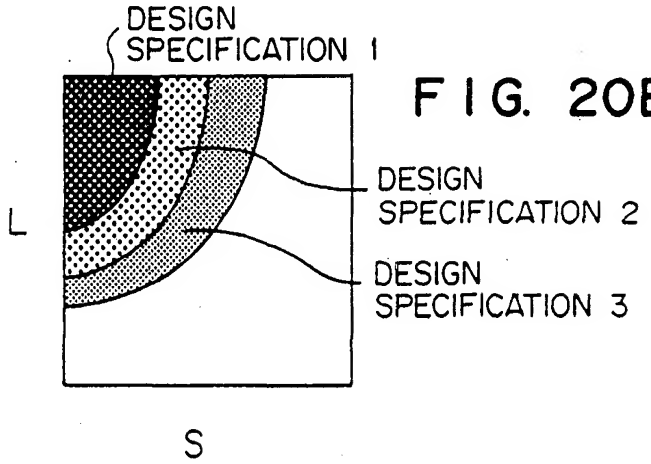


FIG. 20A



DESIGN CHART OF DESIGN SPECIFICATION 1

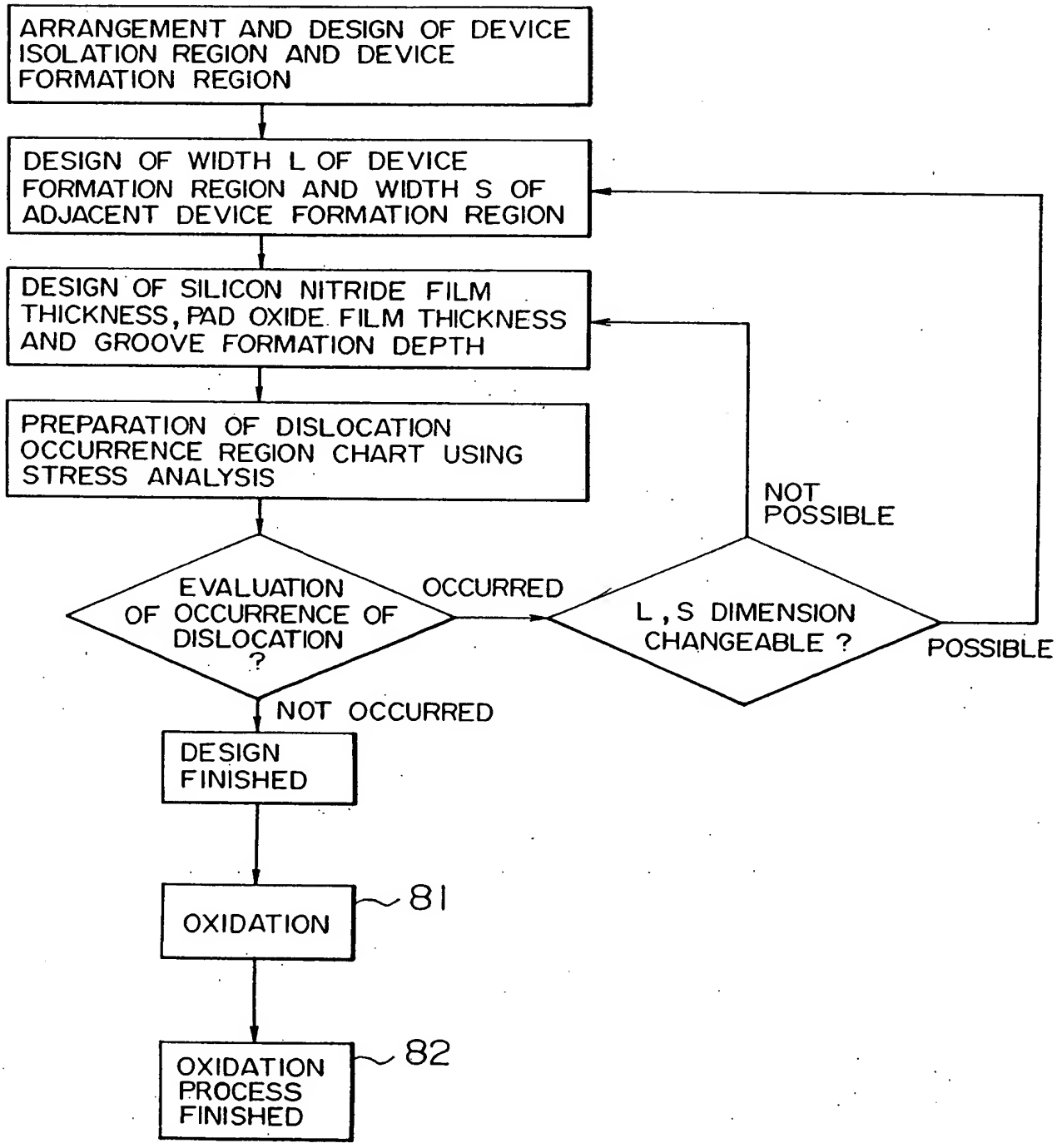
FIG. 20B



DOT REGION : $(\sigma/\sigma_C) > 1$

COLLECTIVE DESIGN CHART

FIG. 21


ARRANGEMENT AND DESIGN OF DEVICE ISOLATION REGION AND DEVICE FORMATION REGION
DESIGN OF WIDTH L OF DEVICE FORMATION REGION AND WIDTH S OF ADJACENT DEVICE FORMATION REGION
DESIGN OF SILICON NITRIDE FILM THICKNESS, PAD OXIDE FILM THICKNESS AND GROOVE FORMATION DEPTH
PREPARATION OF DISLOCATION OCCURRENCE REGION CHART USING STRESS ANALYSIS
EVALUATION OF OCCURRENCE OF DISLOCATION ?
OCCURRED
L, S DIMENSION CHANGEABLE ?
NOT POSSIBLE
POSSIBLE
NOT OCCURRED
DESIGN FINISHED
OXIDATION
81
OXIDATION PROCESS FINISHED
82